

NEW DESCRIPTIONS

1897 in general shape. In *S. hanumantharaoi* the flagellum of antenna is composed of 6 articles; whereas in *S. harfordi* antennular flagellum consists of 31 articles. The present form shows some resemblances to *S. fluvialtilis* Pillai, 1963 in the structure of maxillule, maxilla and distally truncated uropod, but can be easily separated by its differently shaped antennule, antenna and telson.

The present species also resembles *S. worliensis* Joshi & Bal, 1959 in the shape of maxilla, maxilliped and presence of arcuate depressions on pereon, but differs from it in the structure of antennular flagellum, uropods and telson, and thereby differs from all other species,

especially in the structure of antennule, antenna, maxillule, maxilla and shape and size of the cephalon, pereon and pleon.

The species is named in honour of Prof. K. Hanumantha Rao, Department of Zoology, Andhra University, Waltair, India.

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DESCRIPTIONS OF TWO NEW SPECIES OF *TETRASTICHUS* HALIDAY (HYMENOPTERA: EULOPHIDAE) FROM INDIA¹

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AND PREM KISHORE³
(With five text-figures)

Tetrastichus agarwali sp. nov. and *Tetrastichus delhiensis* sp. nov., parasites of *Atherigona soccata* (Rondani) are described and illustrated. The new species are compared with their closely allied species. Types are deposited in Zoological Museum, Aligarh Muslim University, Aligarh, India.

***Tetrastichus agarwali* sp. nov.**
(Figs. 1-3)

FEMALE

Head dark except region below antennal in-

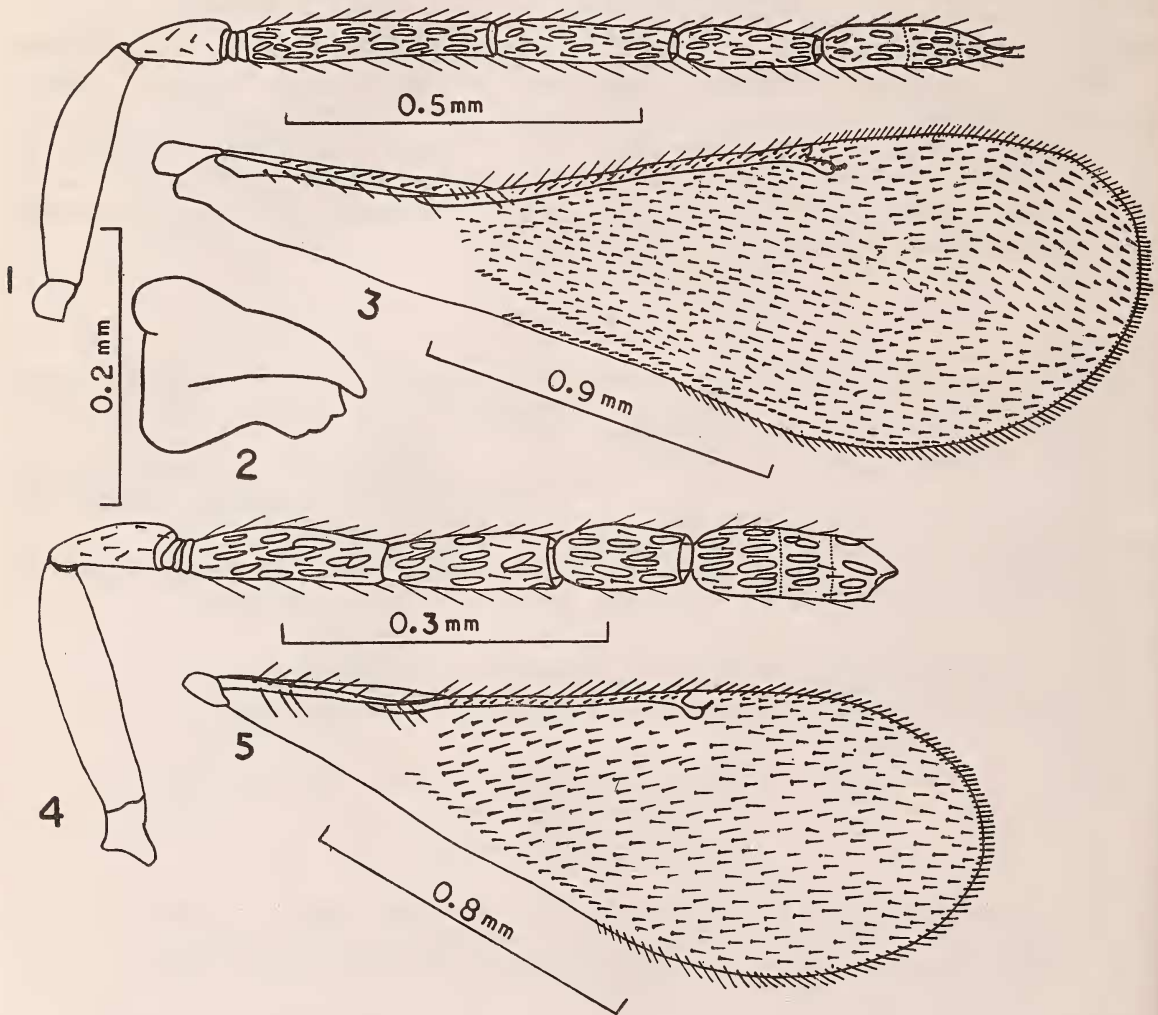
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sertion, orbital margins, and malar space yellow; frontovertex about twice as wide as long; ocelli red, arranged in obtuse triangle, basal ocellus separated by two times its diameter from orbital margin and its own diameter from anterior ocellus; antennae inserted

above lower level of eyes; inter antennal space about one-fourth the width of frons at median ocellus; malar space as long as eye width, malar sutures distinct; maxillary and labial palpi each 1-segmented; mandibles as shown in figure 2. Antennae (fig. 1) dark brown



Figs. 1-3 *Tetrastichus agarwali* sp. nov., ♀ :
 (1) Antenna; (2) Mandible; (3) Fore wing.
 Figs. 4, 5. *Tetrastichus delhiensis* sp. nov., ♀ :
 (4) Antenna; (5) Fore wing.

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except ventral margin of scape yellow; scape four times as long as wide; pedicel two times as long as wide, less than half the length of first funicle segment; three ring segments distinct; funicle segments 1-3 gradually decreasing in length distad, first segment longest, six times as long as wide, third, three and a half times as long as wide; club, four times as long as wide, shorter than first and subequal to second funicle segment; funicle and club segments each with numerous sensoria.

Thorax dark with metallic bluish reflections; pronotum slightly shorter than scutum; scutum with 7 setae arranged in two rows near each parapsidal furrow; scutellum about as long as scutum, with two submedian grooves and two pairs of setae; propodeum with longitudinal carina medially. Fore wings hyaline, about three times as long as wide; costal cell slightly shorter than marginal vein and with 10 small setae; submarginal and marginal veins with 7 and 20 setae respectively, postmarginal vein rudimentary; stigmal vein short; marginal fringe short, spaced by a distance equal to one-fourth their length. Hind wings hyaline; marginal fringe longer than wing width. Legs yellow except hind coxae and all pretarsi dark brown.

Abdomen dark with metallic reflections, as long as thorax; ovipositor hidden, arising from basal one-third of abdominal venter.

Body length: 3.06 mm.

Comments: The new species is closely related to *T. tritrichia* Saraswat, 1975 from which it can be separated by its having funicle segment first as long as scape, second as long as club; fore wings long and narrow with short stigmal vein.

Holotype ♀, Paratype 1 ♀, INDIA: Delhi, IARI farm, ex *Atherigona soccata* (Ron-dani), on *Sorghum bicolor* (Linn.), 20.7.1978 (Prem Kishore).

This species is named after Dr. R. A. Agarwal, Head, Division of Entomology, IARI, New Delhi, in recognition of his contributions to Applied Entomology.

***Tetrastichus delhiensis* sp. nov.**

(Figs. 4, 5)

FEMALE

Resembles *T. agarwali* sp. nov. except in the following characters:

Head with ocelli white, basal ocellus separated by three times its diameter from orbital margin; malar space slightly shorter than eye width. Antennae (fig. 4) with scape slightly more than four times as long as wide; pedicel two and a half times as long as wide, more than half the length of first funicle segment; funicle segment first three and a half times, second three times, and third two times as long as wide; club three times as long as wide, as long as first and longer than second funicle segment.

Thorax with mesoscutum bearing four small setae near each parapsidal furrow. Fore wings less than three times as long as wide; submarginal and marginal veins with 7 and 16 setae respectively.

Abdomen slightly longer than thorax; ovipositor slightly exerted, arising from base of the abdominal venter.

Body length: 2.27 mm.

Comments: This species is closely related to *T. travancorensis* Saraswat, 1975 but is distinguished by its having the first funicle segment three and a half times as long as wide, as long as club; fore wings with short stigmal vein.

Holotype ♀, Paratype 1 ♀, INDIA: Delhi, IARI farm, ex *Atherigona soccata* (Ron-dani), on *Sorghum bicolor* (Linn.), 20.7.1978 (Prem Kishore).

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ARUNDINELLA CANNANORICA: A NEW SPECIES OF POACEAE
FROM KERALA, INDIA¹

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(With eleven text-figures)

Arundinella kannanorica sp. nov.

Ab *Arundinella laxiflora* Hook. f., nodis ramorum villosis; ramis panicularum ascendentibus; carinis paleae infernae glabris, lemmate supero lemmatis inferni 2/3 longo, crasso, coriaceo, muricato; apice rotundato, non dentato; callo flosculi superi dense barbato differt.

Differs from *Arundinella laxiflora* Hook. f. in: branches villous at nodes; panicle branches ascending; keels of lower palea glabrous; upper lemma 2/3 the length of lower lemma, thick, coriaceous, muricate, tip rounded, not toothed; callus of upper floret densely bearded.

Annuals. Culms 20-50 cm tall, erect, slender; nodes glabrous. Leaves 2-5 cm long and 2-5 mm broad, mostly basal, lanceolate, base rounded or shallowly cordate, glabrous or covered with sparse tubercle-based hairs, especially along the margins. Sheaths 1-8 cm, lower ones shorter and upper ones much longer than the internodes, striate, glabrous or ciliate along one margin. Ligule, a row of hairs. Panicles 10-40 cm long, lax, willowy; branches 1-12 cm long, ascending, alternate or rarely whorled,

slender, filiform, angular, bearded at the nodes with long silky hairs, purple; rhachis flexuous, angular and scaberulous; pedicels 2-15 mm long, slender, angular, scaberulous. Spikelets 5-6 mm long, lanceolate, acuminate, turgid, pale-green or purple, glabrous. Lower glumes 3.5-4.5 x 1.0-1.5 mm, ovate-lanceolate, strongly 3-nerved, purple, glabrous. Upper glumes 5.0-5.5 x 1.25-1.50 mm, ovate-lanceolate, caudate or long-acuminate, strongly 5-nerved, greenish with purple tinge, glabrous. Lower floret male; lemma 2.75-3.00 x 1.0-1.5 mm, ovate-oblong, obtuse, faintly 5-nerved, lateral nerves very close, pale-green, membranous and glabrous; palea 2.0-2.5 x 0.50-0.75 mm, elliptic-lanceolate, 2-keeled and auriculate at base, 2-nerved, hyaline, glabrous; stamens 3, anthers 1.0-1.5 mm long, filaments short. Upper floret bisexual; callus bearded, hairs 0.25-0.50 mm long; lemma 1.75-2.00 x 0.50-0.75 mm, ovate or elliptic, tip with a geniculate awn, dorsally covered with numerous wart-like outgrowths, chest-nut brown when fully matured, awn 8-10 mm long, geniculate, column c. 4 mm long, chest-nut brown; palea 1.25-1.50 x 0.4-0.5 mm, oblong, acute, 2-nerved, with a few wart like outgrowths on

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